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# SUPPLEMENTARY EUROPEAN SEARCH REPORT

0 3 4 4 2 5 9

Application Number

EP 89 90 0040

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 4)
X	US-A-4 216 577 (BADET et al.) * Figures 2-4; column 4, line 62 - column 5, line 4; column 8, lines 37-42 *	1,2,5,9 ,11	H 01 L 23/48 H 01 L 29/52
X	FR-A-2 439 478 (HONEYWELL-BULL) * Figures 7-8; page 7, line 34 - page 8, line 38 *	1-3,6, 11	
A	DE-A-3 222 791 (SIEMENS) * Page 5, lines 16-19; page 6, lines 16-19 *	6-8,14, 15	
A	EP-A-0 072 673 (3M) * Page 7, lines 13-15 *	4	
A	FR-A-2 205 800 (HONEYWELL-BULL) * Page 3, lines 15-33 *	1	
			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
			H 01 L
The supplementary search report has been drawn up for the claims attached hereto.			
Place of search THE HAGUE		Date of completion of the search 24-01-1991	Examiner GREENE S.K.
<p><b>CATEGORY OF CITED DOCUMENTS</b></p> <p>X : particularly relevant if taken alone  Y : particularly relevant if combined with another document of the same category  A : technological background  O : non-written disclosure  P : intermediate document</p> <p>T : theory or principle underlying the invention  E : earlier patent document, but published on, or after the filing date  D : document cited in the application  L : document cited for other reasons  &amp; : member of the same patent family, corresponding document</p>			

CLAIMS

What is claimed is:

- 5 1. A semiconductor device package comprising:  
a tape including a patterned insulating layer and  
a conductive layer, said conductive layer being joined  
to said insulating layer;  
a semiconductor die secured to one surface of said  
10 tape;  
an insulating element joined to said conductive  
layer;  
means for electrically coupling said semiconductor  
die to said conductive layer;  
15 a body frame joined to said conductive layer and  
positioned about said semiconductor die and said  
electrical coupling means; and  
an encapsulant body disposed over said frame and  
within said frame over said die and said electrical  
20 coupling means.
2. A semiconductor device package as in Claim 1,  
including a conductive film disposed between said patterned  
insulating layer and said conductive layer.
- 25 3. A semiconductor device package as in Claim 2,  
wherein said conductive film is formed from sputtered  
copper.
- 30 4. A semiconductor device package as in Claim 1,  
wherein said insulating layer is made of a flexible  
material.
5. A semiconductor device package as in Claim 3,  
35 wherein said insulating layer is made of Kapton.

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6. A semiconductor device package as in Claim 1, wherein said conductive layer is made of gold plate.

5 7. A semiconductor device package as in Claim 1, including an insulating element joined to the backside of said conductive layer.

8. A semiconductor device package as in Claim 1, wherein said coupling means comprise bond wires.

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9. A semiconductor device package as in Claim 7, including a silicon gel disposed over said die and said bond wires.

15 10. A semiconductor device package as in Claim 1, including bond lead fingers coupled to said bond wires, and conductive pins coupled to said bond lead fingers for connection to external conductive leads.

20 11. A semiconductor device package as in Claim 1, wherein said electrical coupling means comprise conductive bumps.

25 12. A semiconductor device package as in Claim 10, wherein said insulating element is a backside element, and said body frame is connected to said backside element surrounding said conductive leads.

30 13. A semiconductor device package as in Claim 1, wherein said body frame has a height substantially greater than the thickness of said patterned insulating layer.

14. A process of making a semiconductor device package comprising the steps of:

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forming a patterned wire bondable tape by sputtering a conductive film on an insulating layer;

etching the insulating layer and conductive film to define a pattern of conductive leads;

5 depositing a patterned conductive layer on said conductive film;

attaching a semiconductor die to said wire bondable tape;

10 forming electrical connections between said die and said conductive layer;

joining an insulating element to the backside of said conductive layer;

depositing a protective insulating coating over said die and electrical connections;

15 attaching a body frame to the upper surface of said conductive layer and insulating element, surrounding said die, electrical connections and coating; and

20 encapsulating said body frame, coating, die and electrical connections with an insulating material.

15. A process as in Claim 14, wherein said die is attached to said tape by a die attach epoxy and cured at a temperature of about 150°C for one hour or less.

25 16. A process as in Claim 14, including the step of forming said electrical connections are formed by thermosonically bonding wires between said die pads to conductive leads of said patterned conductive layer.

30 17. A process as in Claim 14, wherein said step of depositing a protective coating comprises applying a silicone gel to flow over said die and electrical connections and curing the gel coating.

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18. A process as in Claim 14, including the step of causing a body frame adhesive to flow to said insulating element on said conductive leads.